

NOTES ON STERCULIA ALEXANDRI, Harv.

(With Plates I and II.)

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The genus *Sterculia* is represented in South Africa by three species, two of these, *S. murex* and *S. rogersii*, being confined to the Northern Transvaal and Swaziland and the third, *S. alexandri*, occurring in only two localities in the Eastern Cape Province. The following notes deal with the variations in the growth of *S. alexandri* in these two localities.

The type specimens were collected by Dr. Alexander Prior in 1848 in the Winterhoek Mountains north of Uitenhage. These mountains are one of the most easterly extremities of the coastal fold belt; they are formed mainly of Table Mountain Sandstone and are deeply dissected by narrow valleys. In these valleys, within a rather restricted area, occasional groups of *S. alexandrii* occur, both on the margin of macchia-like bush near dry river beds and in the open on the hill slopes. The vegetation on the slopes is unstable owing to burning and grazing, cover is sparse and is made up chiefly of several species of Restionaceae and Gramineae and scattered shrubs of which the most frequent are *Leucospermum attenuatum*, *Euclea polyandra* and *Passerina* sp. A typical specimen of *S. alexandri* in such a locality is shown in Plate I, Fig. 1. All the trees of this group were erect and about 10 ft. high with coppicing shoots at the base of the trunk and occurred from 3 to 30 ft. away from each other. Within the area of the group underground stems, evidently exposed by erosion, were seen; they were about 6 inches in diameter and had the characteristic smooth silvery bark and evenly spaced lenticels of *S. alexandri*. A careful examination showed that undoubtedly some of the trees in the group were offsets of the same underground system and not separate individuals as would seem to be the case from a first casual inspection. Before discussing this peculiar form of growth it is as well to describe the other extreme form which is to be seen at Van Stadens west of Port Elizabeth.

The Van Stadens Mountains are a more southerly extremity of the coastal fold belt than the Winterhoek Mountains, but are also formed by the Table Mountain Series. In general, the climate is more temperate than at Uitenhage and the annual rainfall higher, the average for a period of twenty years at Van Stadens being 30.55 inches, while for the same period at Uitenhage it was 18.25 inches (Schönland). Where the Van

Stadens River flows through a deep gorge, there is quite an extensive development of low temperate forest, the most frequent trees being *Lachnopylis floribunda*, *Brachylaena dentata*, *Gonioma kamassi* and *Curtisia faginea*. Amongst such trees and not far from the river margin a few small groups of *S. alexandri* are to be found. Under these conditions its growth might be described as decumbent, since long trunks lying close to the ground give rise to laterals which grow out at all angles but whose branches eventually contribute to the general foliage of the canopy above. A photograph of a typical specimen of this habit is given on Plate II.

These differences in habit are constantly associated with differences in the height of the surrounding vegetation for in the macchia-like bush which forms a transitional community between open veld and fragments of temperate forest as, for example, in the valleys of the Winterhoek Mountains, intermediate forms between these two extremes occur; in fact, it is here that the most vigorous trees are to be found. Hence it would seem that the growth form of *S. alexandri* is highly plastic, being influenced chiefly by the physical conditions associated with differences in the density and height of the surrounding vegetation. When exposed to high light intensity and sudden fluctuations of humidity the main horizontal branches are apparently developed underground, but when protected by a high canopy of other vegetation giving reduced light intensity and more even humidity the main horizontal branches occur above ground.

The colour of the flowers also varies considerably according to the light intensity. Trees on open hill slopes have yellow flowers with a rich claret-coloured throat (Plate I, Fig. 2), while those in bush or in forest have pale greenish-cream flowers with only a few flecks of red. The flowering period is apparently dependent to a large extent on the rainfall. Schönland and MacOwan both collected flowering material in January; Drege in August; this year (1950) after a prolonged drought followed by good rains the trees in both localities were flowering in May and June. During the first part of the season the flowers were mostly male by abortion of the carpels (Archibald), later fully developed bisexual flowers were formed, sometimes two or three occurring on the same inflorescence, but many of these dropped when unusually hot days occurred shortly after they had opened. Even under favourable conditions it is seldom that all five follicles mature so that the total production of seed is not great. Judging from the remains of old fruits below the trees those growing in bush and forest are more fertile than the ones growing in exposed situations. All these factors indicate that the species thrives best in the mixed community of the forest margin.



PLATE I. FIG. 1.—*Sterculia alexandri* growing on an exposed slope in the Winterhoek Mountains.
FIG. 2.—Flowering shoot of *S. alexandri* from a tree growing in an exposed position.
($\frac{1}{3}$ natural size).



PLATE II. *Sterculia alexandri* growing in low temperate forest at Van Stadens.

Seeing these trees in their natural surroundings one gains the impression that the groups are all old-established ones, although the suckers are of varying ages from young ones of the previous year to well developed tree trunks of 9 inches or more in diameter. No young trees, that could not be associated with an older underground system, or seedlings were seen and this is not altogether surprising since in both localities baboons are very prevalent and are known to eat the ripe seeds. However, although peculiar in its habit and restricted in its natural distribution, the species should be in no danger of extinction since it has been found that it can be readily propagated from cuttings.

With regard to plants in cultivation, I have been told that a single specimen was successfully raised from seed by Mr. Cartwright at the Magennis Park, Uitenhage. Apparently it flowered and bore fruit regularly each season and had reached a height of 20 ft. or more before it died during the severe drought of 1948-49. At the National Botanic Gardens, Kirstenbosch, there are three fine trees also raised from seed, sent by Mrs. T. M. Paterson from Kamaehs, near Uitenhage, and now about 31 years old. When I inspected them with Professor Compton early in October 1950, they each bore several fine clusters of green fruit, as they were said to have done for several years. In our own garden at Walmer we set cuttings in June and July 1950, two from underground parts and two from aerial branches, taken from the trees in the Winterhoek Mountains and the Van Stadens Gorge, respectively. Three of these cuttings took successfully and for the past six months have done well.

LITERATURE CITED.

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